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Distribution and conservation status of the critically endangered harlequin frog *Atelopus epikeisthos* (Anura: Bufonidae)

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The Neotropical toad genus *Atelopus* contains 97 described species, most of which have been categorized as ‘Threatened’ by the International Union for Conservation of Nature (IUCN 2015). Many species of *Atelopus* have experienced population declines in Central and South America (LA MARCA et al. 2005, LÖTTERS et al. 2005), and some are thought to have become extinct (LÖTTERS et al. 2011). In Peru, 13 out of 19 species of *Atelopus* known to occur in the country are categorized as ‘Critically Endangered’ under the IUCN Red List of Threatened Species criteria (IUCN 2015), and many of these species have not been detected by researchers in recent decades. For example, *A. peruensis* was recorded in the Cajamarca region before 2002, but not in the most recent surveys (VON MAY et al. 2008); for *A. reticulatus*, the last confirmed sighting occurred in 1992 (IUCN 2015); *A. tricolor* and *A. erythropus* have not been seen over the past 15 years (CATENAZZI et al. 2011). VENEGAS et al. (2008) linked the decline of a population of *A. patazensis* to infection caused by the chytrid fungus, *Batrachochytrium dendrobatidis*, which was detected in individuals collected in 1999. Subsequent surveys of *A. patazensis* resulted in new sightings in 2010 (IUCN SSC Amphibian Specialist Group 2013), suggesting that there still was hope for the survival of this species. Nevertheless, the continued presence of the chytrid fungus, habitat loss, and habitat degradation throughout the Tropical Andes threaten many species of *Atelopus* and other amphibian taxa (CATENAZZI & VON MAY 2014, LA MARCA et al. 2005).

The harlequin frog *Atelopus epikeisthos* LÖTTERS, SCHULTE & DUELLMAN, 2004 is a species known from a single individual collected in 1989 in the Cordillera Central, Amazonas region, Peru. The type locality, a small

ravine covered with remnant humid montane forest at 2,010 m above sea level (ca 06°16’ S, 77°41’ W), was revisited in 2002, but no representatives of this species were observed during field surveys (LÖTTERS 2008). Subsequently, *A. epikeisthos* was regarded as ‘Critically Endangered’ (CR) B1ab(iii)+2ab(iii), given that the species was known only from a single locality, had a small Extent of Occurrence (EOO < 100 km²), and likely experienced a population decline (LÖTTERS 2008). Additionally, the ongoing loss and degradation of native habitat and potential chytrid fungus infections continue to pose a threat to this species.

Here, we provide new distributional data for *A. epikeisthos*. Our report is based on field observations and the collection of a voucher specimen from a site located in the Cordillera Central, Amazonas region, Peru. We used the morphological diagnosis provided by LÖTTERS et al. (2004) to identify this specimen and took measurements to the nearest 0.1 mm with callipers under a stereomicroscope. Photographs taken in the field will be deposited in the Calphotos database (<http://calphotos.berkeley.edu>).

On 4 March 2014, an adult female of *A. epikeisthos* (snout–vent length 68.40 mm) was found in the leaf litter of a montane forest near Shipasbamba, Bongará Province, Amazonas Region (05°53’ S, 78°4’ W, 1,733 m a.s.l.). In life (Fig. 1), the overall coloration of this individual was light olive green on dorsum, head, and upper faces of arms and legs; the dorsum also bears several narrow black blotches and spots; bright yellow on flanks and side of head; a combination of bright yellow and light olive green on upper faces of hands and feet; ventral faces of head, body, and limbs bright yellowish tan; several black blotches and spots on venter and lower face of legs; an elliptical orange area on

Table 1. Measurements (in mm) of an adult female individual of *Atelopus epikeisthos* (MUSA-4503). SVL – snout–vent length; TL – tibia length; FL – foot length; HL – head length; HW – head width; ED – eye diameter; TY – tympanum diameter; IOD – interorbital distance; EW – upper eyelid width; IND – internarial distance; E–N – eye–nostril distance.

Character	MUSA-4503
SVL	68.40
TL	26.50
FL	27.60
HL	13.50
HW	17.20
ED	4.70
TY	3.90
IOD	5.50
EW	5.50
IND	5.30
E–N	4.60

proximal face of thighs next to cloaca. The voucher specimen was deposited in the Herpetological Collection of the Museo de Historia Natural (MUSA), Universidad Nacional de San Agustín de Arequipa, Peru, under the collection

number MUSA-4503. Morphometric data are provided in Table 1.

This report represents an extension of ca. 60 km of the known geographic range of *A. epikeisthos* (Fig. 2) and the only documented sighting of this species in 25 years. Considering the altitudes of the type locality and the new locality reported here, the currently known altitudinal range of *A. epikeisthos* is 1,733–2,010 m. Furthermore, given that neither the type locality nor the new locality are currently protected, conserving the remaining habitat of this species should be considered a high priority in initiatives by Peru's Wildlife Service – the Servicio Nacional Forestal y de Fauna Silvestre (SERFOR) – and the Ministry of the Environment (VON MAY et al. 2012, CATENAZZI & VON MAY 2014).

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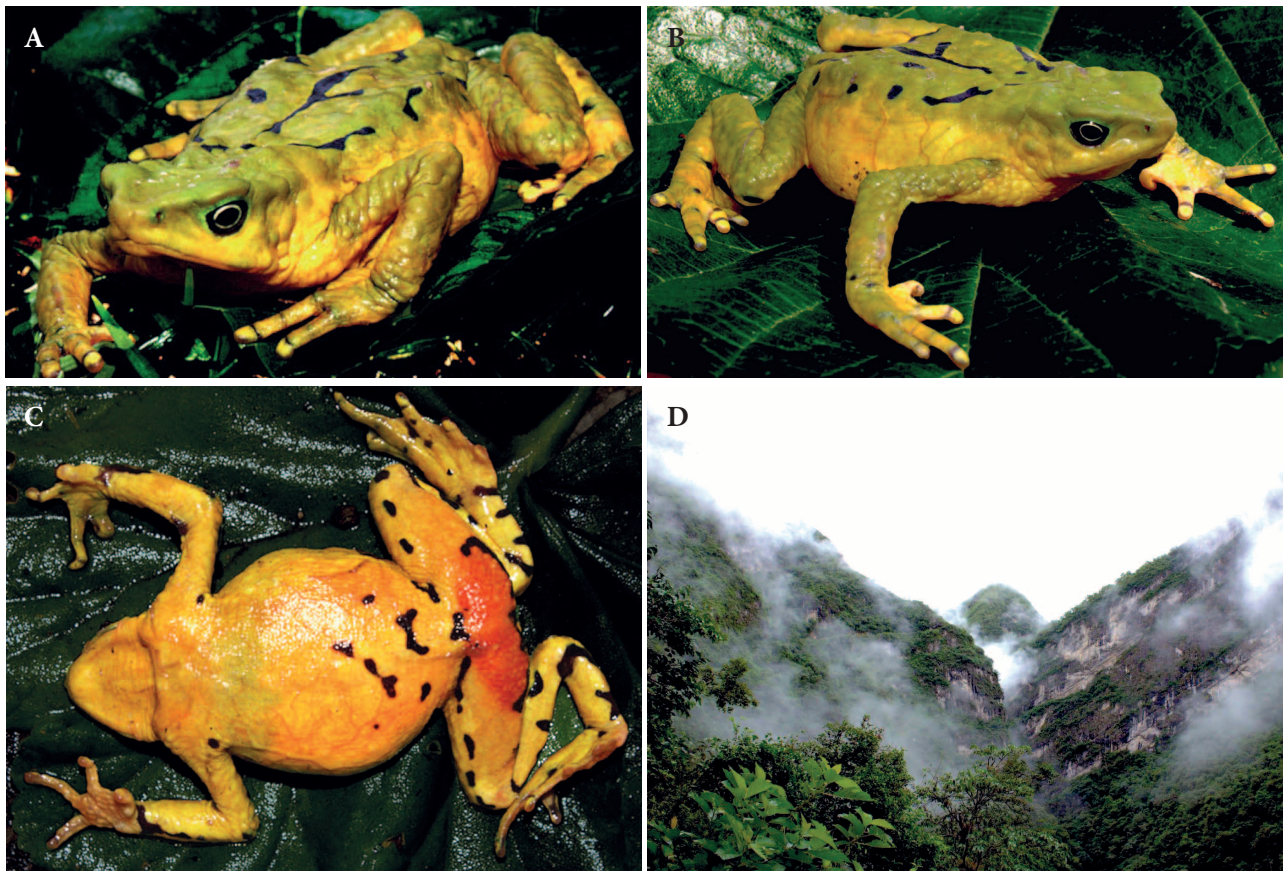


Figure 1. Adult female *Atelopus epikeisthos* (MUSA-4503) found in Bongará Province, Amazonas region, Peru. Left (A) and right (B) dorsolateral views, ventral view (C), and habitat (D). Photographs by WILLY L. DELGADO.

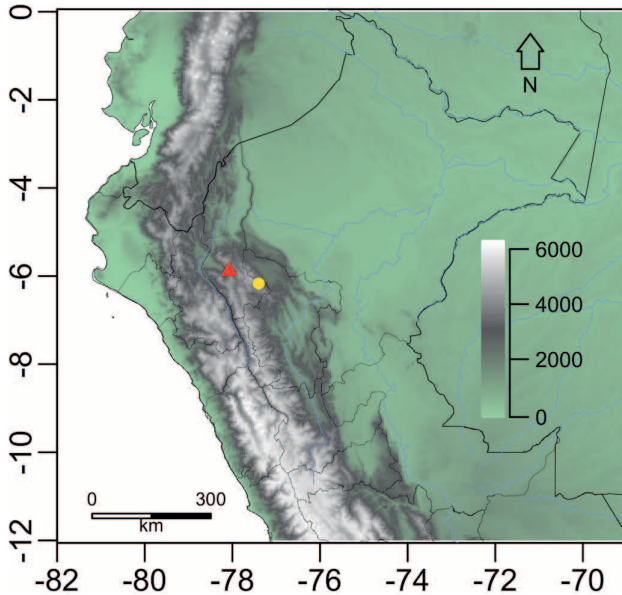


Figure 2. Known distribution of *Atelopus epikeisthos*. The yellow circle indicates the type locality and the red triangle the location of the new record, both in the Amazonas region, Peru.

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